

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

1. (Cancel)

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5. (Currently Amended) An isolated polynucleotide which encodes a protein having β 4 acetylgalactosaminyl transferase activity and which is selected from the group consisting of:

(A) a polynucleotide ~~which selected from the group consisting of SEQ ID NO:2 and an expressible coding sequence of SEQ ID NO:2;~~

(B) a polynucleotide ~~which differs in nucleotide sequence from the polynucleotides of (A) above due to degeneracy of the genetic code and which encodes a protein having β 4 acetylgalactosaminyl transferase activity~~ encodes the polypeptide of SEQ ID NO:1; and

(C) a polynucleotide which differs in nucleotide sequence from the polynucleotides of (A) or (B) in that said polynucleotide lacks a nucleotide sequence which encodes a the transmembrane domain of residues 7-29 of SEQ ID NO:1 wherein the polynucleotide encodes a soluble ~~the~~ β 4 acetylgalactosaminyl transferase ~~encoded~~ is soluble.

6. (Original) The polynucleotide of claim 5 wherein the polynucleotide is DNA.

7. (Original) A vector containing the polynucleotide of claim 5.

8. (Currently Amended) ~~A~~ An isolated host cell transformed or transfected with the vector of claim 7.

9. (Currently Amended) A process for producing a protein having β 4 acetylgalactosaminyl transferase activity comprising the steps of:
culturing the host cell of claim 8, thereby expressing the β 4 acetylgalactosaminyl transferase; and
purifying the β 4 acetylgalactosaminyl transferase from the cultured host cell.

10. (Original) The process of claim 9 wherein the protein having $\beta 4$ acetylgalactosaminyl transferase activity is soluble.

11. (Currently Amended) The isolated host cell of claim 8 wherein the polynucleotide is operatively associated with an expression control sequence contained in said vector.

12. (Currently Amended) The host cell of claim 8 transformed or transfected with an expressible polynucleotide encoding a peptide or polypeptide requiring post-translational formation of an LDN a GalNAc $\beta 4$ GlcNAc structure thereon.

13. (Currently Amended) An isolated polynucleotide which encodes a protein having ~~$\beta 4$ GalNAcT~~ $\beta 4$ acetylgalactosaminyl transferase activity and which is ~~selected from the group consisting of:~~

~~—— (A) a polynucleotide which hybridizes with a nucleic acid selected from the group consisting of SEQ ID NO:2 or an expressible coding sequence thereof;~~

~~—— (B) a polynucleotide which hybridizes with a nucleic acid which differs in nucleotide sequence from the isolated polynucleotides of (A) above~~

~~due to degeneracy of the genetic code and which encodes a protein having β 4GalNAcT activity; and~~

wherein the polynucleotides of (A) and (B) hybridizes under stringency conditions comprising prehybridization and hybridization at 68°C followed by ~~washing twice with two x SSC, 0.1% SDS at 22°C, and washing twice with 0.2 x SSC, 0.1% SDS at 22°C; or prehybridization and hybridization at 42°C in 5 x SSPE, 0.3% SDS, 200 ug/ml sheared and denatured salmon sperm DNA, and 25% formamide, or 35% formamide, or 50% formamide, and washing with 2 x SSC, 0.2% SDS at 50°C.~~ washing twice with 0.1 x SSC, 0.1% SDS for 20 minutes at 22°C and twice with 0.1 x SSC, 0.1% SDS for 20 minutes at 50°C.

14. (Original) The polynucleotide of claim 1 wherein the polynucleotide is DNA.

15. (Original) A vector containing the polynucleotide of claim 13.

16. (Currently Amended) A An isolated host cell comprising the vector of claim 15.

17. (Currently Amended) A method for producing a protein or peptide having a GalNAc β 1, 4 GlcNAc structure thereon, comprising the steps of:

providing a the host cell having an expressible of claim 16, with an expression vector comprising a polynucleotide encoding a peptide or polypeptide requiring a GalNAc β 1,4GlcNAc structure and ~~transformed or transfected with the vector comprising a polynucleotide encoding a β 4GalNAcT;~~

expressing in the host cell the ~~β 4GalNAcT~~ and the protein or peptide ~~requiring the GalNAc β 1,4 GlcNAc structure thereon~~ thereby forming a glycosylated protein or peptide having the GalNAc β 1, 4GlcNAc structure; and

purifying the glycosylated protein or peptide ~~having the GalNAc β 1,4GlcNAc structure thereon.~~

18. (Currently Amended) The method of claim 17 wherein the host cell comprising the polynucleotide encoding a protein having β 4 acetylglactosaminyl transferase activity comprises SEQ ID NO: 2 ~~or an expressible coding sequence thereof.~~

19. (Currently Amended) The method of claim 17 wherein the ~~β 4GalNAcT~~ β 4 acetylglactosaminyl transferase comprises SEQ ID NO: 1 ~~or a~~
~~variant thereof having β 4GalNAcT activity.~~

20. (Cancel)

21. (Cancel)

22. (Cancel)